(54) **Translation service providing method and translation service system**

(57) A method for providing translation services is disclosed. In this method, a request for translation from a user is received, which request includes at least first language documents. If the request includes some designated terms to be used in a translation, the received first language documents are translated into second language documents on the basis of the designated terms. Those terms included in the received first language documents are extracted, which have a possibility not to be sufficiently translatable. The resultant translation and/or the extracted terms are provided to the user.
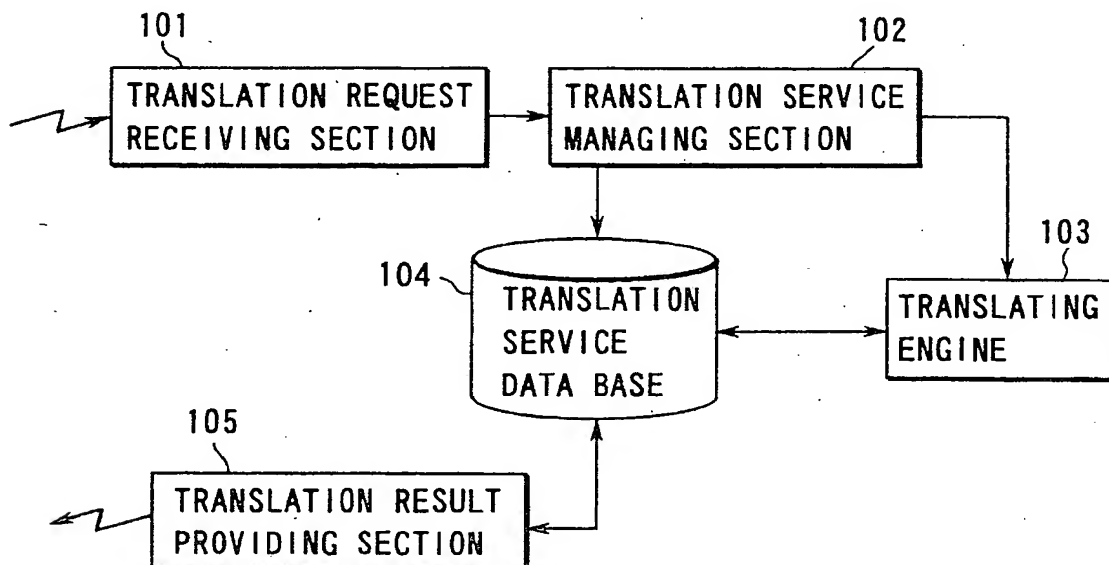
FIG. 1

on the basis of designated terms, if any, included in the request, and extracting those terms included in the received first language documents which have a possibility not to be sufficiently translatable; and a procedure for providing the user with the resultant translation and/or the extracted terms.

Another computer readable recording medium of the invention stores a program for causing a computer to execute: a procedure for receiving a request from a user, which includes at least first language documents and requests that those terms included in the first language documents be extracted, which have a possibility not to be sufficiently translatable; a procedure for extracting the terms included in the received first language documents which have the possibility not to be sufficiently translatable; and a procedure for providing the user with the extracted terms.

As a method for extracting the terms which have a possibility not to be sufficiently translatable, a list-up method is exemplified, wherein those terms included in the original documents are listed, which are estimated important but are nevertheless not registered as entries in the dictionaries or have no corresponding terms designated to be used in a translation. The frequency of each term in the documents, for example, can be used as a standard for judging whether the term has an important meaning in the documents.

For example, suppose that the terms "service provider" and "serial bus" have appeared in the original text eighteen times and thirteen times, respectively. If they are not registered as compound entries in the dictionaries, the user may be informed by extraction results that "service provider" and "serial bus" are translated into "サービス提供者" (sahbis teikyousha" in katakana and idiograms) and "連続バス" ("renzoku basu" in idiograms and katakana), respectively, which are created by combining translated words of the word components of each of the terms "service provider" and "serial bus".

Further, suppose that the term "hostname" has appeared ten times in the original text and is not listed in the dictionaries. In this case, the user may be informed by extraction results that "hostname" itself is used in the translation.

From those extraction results, the user can understand that a more appropriate translation will be obtained by designating, in a retranslation, "サービスプロバイダ", "シリアルバス" ("sahbis purobaida" and "siriaru basu" in katakana) and "ホスト名" ("hosto mei" in katakana and idiogram) to "service provider", "serial bus" and "hostname", respectively.

In the invention, users can use related matters between translation services. For example, a request for retranslation can be performed in relation to the previous translation request, or translation results on one occasion can be used on another occasion of translation.

As a result, users can obtain satisfactory transla-

tions with a smaller number of process steps and less time, and hence at a lower cost.

This invention can be more fully understood from the following detailed description when taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a block diagram, showing a translation service system according to an embodiment of the invention;

FIG. 2 is a flowchart, useful in explaining a procedure for machine translation performed in the translation service system of FIG. 1;

FIG. 3 is a view, showing a request for machine translation;

FIG. 4 is a view, showing translation results;

FIG. 5 is a view, showing an example of a translation request mail format;

FIG. 6 is a view, showing examples of designated terms to be used in a machine translation;

FIG. 7 is a view, showing examples of frequencies of terms;

FIG. 8 is a view, showing examples of additionally designated terms to be used in a machine translation;

FIGS. 9A and 9B are views, showing an example of a translation result-returning mail format;

FIG. 10 is a view, useful in explaining an outline of a translation service employed in the invention;

FIG. 11 is a view, showing an example of a Web page format for receiving a translation request;

FIG. 12 is a view, showing an example of a Web page format which displays translation results;

FIG. 13 is a flowchart, useful in explaining a translation service according to another embodiment of the invention; and

FIG. 14 is a view, showing results obtained from the translation service of FIG. 13.

The embodiments of the invention will be described with reference to the accompanying drawings.

Although in the embodiments, an English-Japanese translation service for translating English into Japanese is employed, it is a matter of course that the invention is also applicable to a Japanese-English translation service for translating Japanese into English, or to a translation service for translating any other language.

FIG. 1 is a block diagram, showing a translation service system according to an embodiment of the invention.

As is shown in FIG. 1, the translation service of the first embodiment comprises a translation request receiving section 101, a translation service managing section 102, a translation engine 103, a translation service data base 104 and a translation result providing section 105.

The translation request receiving section 101 receives the contents of a translation request, such as

entries which are registered in the standard English-Japanese dictionaries used in the translation service system, together with corresponding Japanese terms). For example, "ソフト" ("sofuto" in katakana) instead of "ソフトウエア" ("sofutowuea" in katakana) is designated for "software", and "インストール" ("insutohru" in katakana) instead of "設置" ("secchi" written in idiograms) is designated for "install".

Although in the FIG. 6 case, English entries are related to corresponding Japanese terms by means of the equal sign "=", another sign may be used if it clarifies the correspondency therebetween.

FIG. 7 shows examples of results of term extraction performed in the embodiment.

Term extraction is performed to list those English terms used in the original documents, which are not registered as entries in the system's English-Japanese dictionary, or have no Japanese terms designated to be used in a translation, although they are estimated important.

The frequency of each term in the documents, for example, can be used as a standard for judging whether the term has an important meaning in the documents.

In FIG. 7, the first two examples indicate that the compound words "service provider" and "serial bus" appeared in the original English text eighteen times and thirteen times, respectively, and that Japanese translation terms "サービス提供者" ("sahbis teikyousha" in katakana and idiograms) and "連続バス" ("renzoku basu" in idiograms and katakana) were created and output by combining translated words of the word components of each of "service provider" and "serial bus", since these compound words were not found as entries in the English-Japanese dictionary.

The last example of FIG. 7 indicates that "hostname" appeared ten times in the original English text, and that "hostname" was output as a literally translated word since no entry thereof was found in the English-Japanese dictionary.

The user refers to those extraction results, and adds designated terms as shown in FIG. 8. Then, retranslation is performed by designating "サービスプロバイダ" and "シリアルバス" ("sahbis purobaida" and "siriaru basu" in katakana) and "ホスト名" ("hosto and "siriaru basu" in katakana) and "ホスト名" ("hosto mei" in katakana and idiogram) to "service provider", "serial bus" and "hostname", respectively. As a result, a more appropriate translation can be obtained.

FIGS. 9A and 9B show an example of an electronic mail format used in this embodiment for returning translation results.

The section from the beginning tag description "<EJTRANS_RESULT> # Resultant Translation BE-GINS" to the tag description "</EJTRANS_RESULT> # Resultant Translation ENDS" indicates a portion where the sentences of an input original text and of the resultant translation are alternately arranged.

The section from the next tag description "</TERM_

EXTRACT> # Term Extraction Result BEGINS" to the tag description "</TERM_EXTRACT> # Term Extraction Result ENDS" indicates a portion where term extraction results and terms used in the present translation are indicated.

The section from the third tag description "<EJTRANS_ENVIRON> # Environmental Setting BE-GINS" to the tag description "</EJTRANS_ENVIRON> # Environmental Setting ENDS" indicates a portion where translation parameters designated at the time of requesting the translation are re-displayed.

The section from the next tag description "<EJTRANS_TERMS> # Term Designation BEGINS" to the tag description "</EJTRANS_TERMS> # Term Designation ENDS" indicates a portion where the terms designated at the time of requesting the translation are re-displayed.

FIG. 10 shows an outline of the above-described translation service. As shown in FIG. 10, first, the user sends, to a server, a translation request A which includes an original text, designated terms and options. The server performs translation and term extraction, thereby obtaining translation results B. Then, the server sends the translation results B to the user. The user modifies the designated terms with reference to the extracted terms included in the translation results B, and then sends a modified translation request B' to the server. The server, in turn, performs retranslation in accordance with the modified translation request B', thereby outputting retranslation results C and transmitting the results C to the user. If necessary, the user re-modifies the modified designated terms on the basis of the reextracted terms, and sends a re-modified translation request to the server to obtain new translation results. By repeating the above procedures, the user can obtain a satisfactory translation.

Although in the above description, the translation request is sent by electronic mail, it can be done using a Web page.

FIG. 11 shows an example of a Web page format for receiving a translation request.

In this case, an original text can be sent together with translation parameters such as a to-be-used technical term dictionary, a translation style, and information on designated terms, in addition to an electronic mail address assigned to the user and used for returning translation results. When the user inputs necessary information items and pushes a "translation request" button on the Web page shown in FIG. 11, the input information items are sent to a translation service system.

The interface of this page can be constituted of a CGI (Common Gateway Interface). For particulars of the CGI, see, for example, Documents "GUIDE TO HTML & CGI" written by Nozomi Sasaki, Masahiro Ohta and Mami Fujisaki (Eiai Publisher, published April 26, 1996). The contents of this publication are incorporated by reference in this text.

When, for example, the user has accessed a WWW

modified terms, ones selected from the extracted terms and modified.

3. A method for providing translation services, characterized by comprising the steps of:

receiving a request from a user, which includes at least first language documents and requests that those terms included in the first language documents be extracted, which have a possibility not to be sufficiently translatable; extracting the terms included in the received first language documents which have the possibility not to be sufficiently translatable; and providing the user with the extracted terms.

4. A method according to any one of claim 1 to 3, characterized in that the request is received via electronic mail.

5. A method according to any one of claim 1 to 3, characterized in that the request is received via WWW page.

6. A method according to any one of claim 1 to 3, characterized in that the extraction results are transmitted via electronic mail to provide them to the user.

7. A method according to claim 1 to 3, characterized in that the resultant translation and/ or the extraction results are transmitted via a WWW page to provide them to the user.

8. A translation service system characterized by comprising:

request receiving means (101) for receiving a request for translation from a user, which includes at least first language documents; translating means (103) for translating the received first language documents into second language documents on the basis of designated terms, if any, included in the request; term extracting means (103) for extracting those terms included in the received first language documents which have a possibility not to be sufficiently translatable; and providing means (105) for providing the user with translation results of the translating means and/or extraction results of term extracting means.

9. A translation service system characterized by comprising:

request receiving means (101) for receiving a request from a user, which includes at least first language documents and requests that those

terms included in the first language documents be extracted, which have a possibility not to be sufficiently translatable; term extracting means (103) for extracting the terms included in the received first language documents which have the possibility not to be sufficiently translatable; and providing means (105) for providing the user with extraction results of the term extracting means.

10. A computer readable recording medium which stores a program for causing a computer to execute:

a procedure for receiving a request for translation from a user, which includes at least first language documents; a procedure for translating the received first language documents into second language documents on the basis of designated terms, if any, included in the request, and extracting those terms included in the received first language documents which have a possibility not to be sufficiently translatable; and a procedure for providing the user with the resultant translation and/or the extracted terms.

11. A computer readable recording medium which stores a program for causing a computer to execute:

a procedure for receiving a request from a user, which includes at least first language documents and requests that those terms included in the first language documents be extracted, which have a possibility not to be sufficiently translatable; a procedure for extracting the terms included in the received first language documents which have the possibility not to be sufficiently translatable; and a procedure for providing the user with the extracted terms.
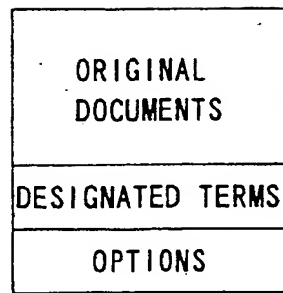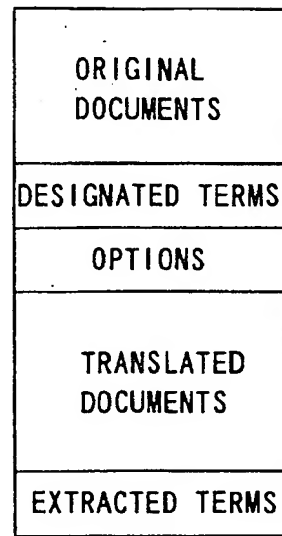
```
┌─────────────────────┐
│      ORIGINAL       │
│     DOCUMENTS       │
├─────────────────────┤
│  DESIGNATED TERMS   │
├─────────────────────┤
│      OPTIONS        │
└─────────────────────┘
```

FIG. 3

```
┌─────────────────────┐
│      ORIGINAL       │
│     DOCUMENTS       │
├─────────────────────┤
│  DESIGNATED TERMS   │
├─────────────────────┤
│      OPTIONS        │
├─────────────────────┤
│                     │
│     TRANSLATED      │
│     DOCUMENTS       │
│                     │
├─────────────────────┤
│   EXTRACTED TERMS   │
└─────────────────────┘
```

FIG. 4

FIG. 6
```
┌──────────────────────────────────────────┐
│ OpenWindows=オープンウィンドウ                 │
│ plug in=プラグオン                          │
│ software=ソフト                            │
│ installation=インストール                    │
└──────────────────────────────────────────┘
```

FIG. 7
```
┌──────────────────────────────────────────────────┐
│                                                  │
│ FREQUENCY18: service provider=サービス提供者          │
│ FREQUENCY13: serial bus=連続バス                    │
│ FREQUENCY10: hostname=hostname                   │
└──────────────────────────────────────────────────┘
```

FIG. 8
```
┌──────────────────────────────────────────────────┐
│                                                  │
│ service provider=サービスプロバイタ                    │
│ serial bus=シリアルバス                             │
│ hostname=ホスト名                                  │
└──────────────────────────────────────────────────┘
```

○RESULTANT TRANSLATION IS AS FOLLOWS:

〈EJTTANS_RESULT〉 ♯ RESULTANT TRANSLATION BEGINS:

OpenWindows Version 2
オープンウィンドウ・バージョン2

Installation and Start-Up Guie
設置およびプロジェクト開始のガイド

Preface
序文

This manual tells you how to install and start up the
OpenWindows environment.
このマニュアルは、オープンウィンドウ環境をインストールし、開始
する方法をあなたに伝える。

You should read these instructions before you install
the OpenWindows software.
オープンウィンドウ・ソフトウェアをインストールする前にこれらの
命令を読むべきである。

The OpenWindows environment is △△△'s network-based
application environment.
オープンウィンドウ環境は、△△△のネットワークに基ずいたアプリ
ケーション環境である。

It includes:
それは次のものを含んでいる。

Open Look Graphical DeskSet User Interface for Unifide
XXX System.
一体になったXXXシステムのための開いた外観図式使用者インターフェ
ース

OpenWindows DeskSet Environment, a suite of integrated
personal productivity tools.
オープンウィンドウDeskSet環境（統合された個人の生産性ツール一式）

XView, an X Window System toolkit.
XView(Xウィンドー・システム・ツールキット)。

OPEN LOOK Intrinsics Toolkit (OLIT), a user inter ace
toolkit based on the Xt Intrinsics from XX.
オープンルックIntrinsicsツールキット(OLIT) (XXからXt Intrin-
sicsに基づいたユーザー・インターフェース・ツールキット)。

FIG. 9A

USER

SERVER

A

ORIGINAL
DOCUMENTS

DESIGNATED TERMS

OPTIONS

A →

B

ORIGINAL
DOCUMENTS

DESIGNATED TERMS

OPTIONS

TRANSLATED
DOCUMENTS

EXTRACTED TERMS

← B

ORIGINAL
DOCUMENTS

DESIGNATED TERMS   B

OPTIONS

MODIFY

TRANSLATED
DOCUMENTS

EXTRACTED TERMS

B' →

C

ORIGINAL
DOCUMENTS

MODIFIED DESIG-
NATED TERMS TO
BE USED TRANSLA-
TION

OPTIONS

RETRANSLATED
DOCUMENTS

RE-EXTRACTED
TERMS

← C

ORIGINAL
DOCUMENTS

C

MODIFIED DESIG-
NATED TERMS TO
BE USED TRANSLA-
TION

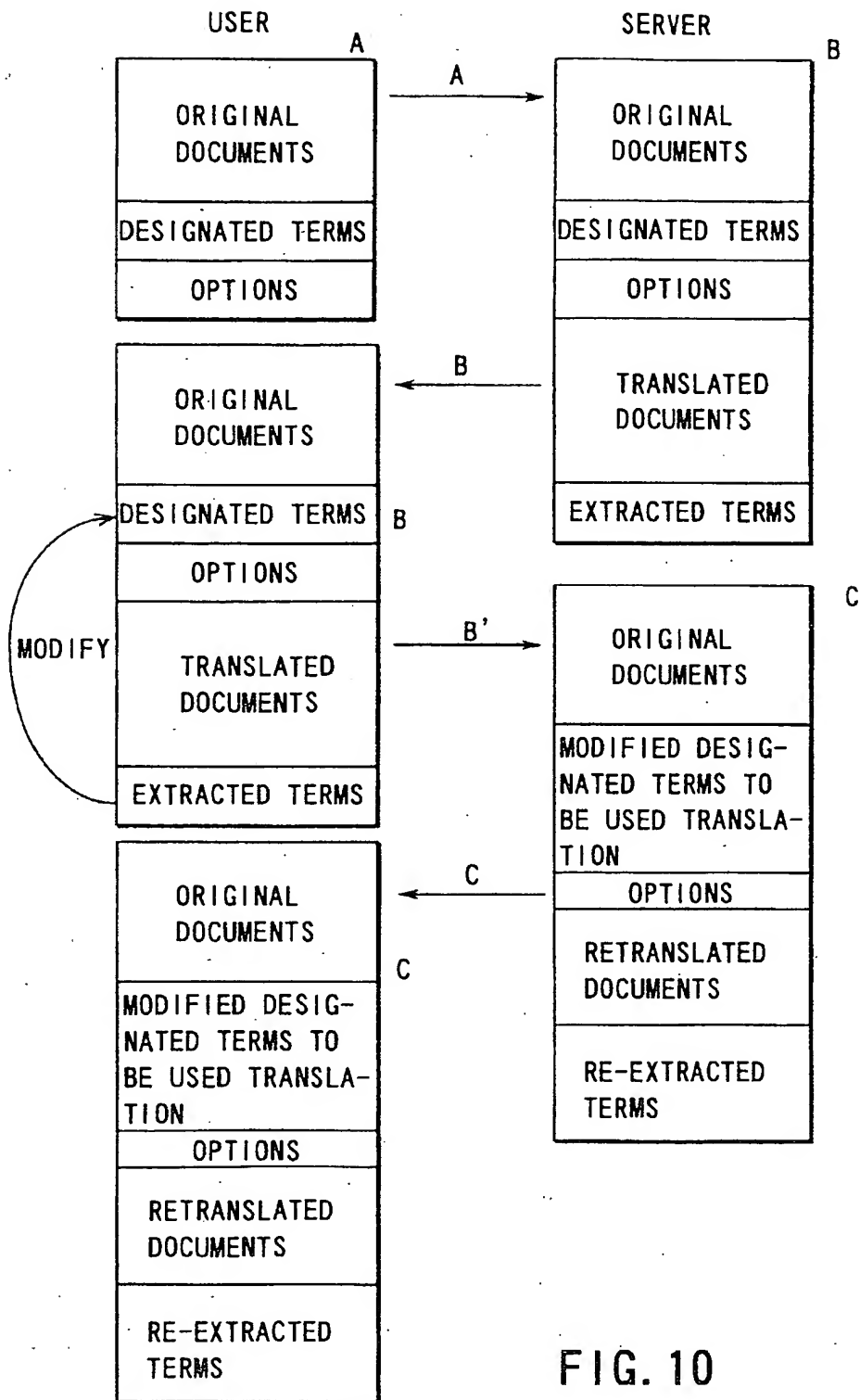OPTIONS

RETRANSLATED
DOCUMENTS

RE-EXTRACTED
TERMS

FIG. 10

RESULTS

REQUEST FOR TRANSLATION 20,1,1997   15:30

TRANSLATION
RESULTS

OpenWindows Version2
オープンウィンドウ・バージョン2

Installation and Start-Up Guide
設置およびプロジェクト開始のガイド

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このマニュアルは、オープンウィンドウ環境を
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You should read these instructions
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オープンウィンドウ・ソフトウェアをインスト
ールする前にこれらの命令を読むべきである。

The OpenWindows environment is Sun's
network-based application environment.
オープンウィンドウ環境はサンのネットワークに
基ずいたアプリケーション環境である。

TERM EXTRACTION RESULTS

FREQUENCY 8 : OpenWindows environment
           =オープンウィンドウ環境
FREQUENCY 5 : OpenWindows software
           =オープンウィンドウ・ソフトウェア
FREQUENCY 4 : X11/NeWS server
           =X11/NeWSサーバー
FREQUENCY 2 : OpenWindows installation
           =オープンウィンドウ装置

(DOWNLOAD)   (DELETE)

FIG. 12

RESULTS

REQUEST FOR TRANSLATION   20,1,1997   15:30

TERM EXTRACTION RESULTS

FREQUENCY 8: OpenWindows environment=オープンウィンドウ環境
FREQUENCY 5: OpenWindows software=オープンウィンドウ・ソフトウェア
FREQUENCY 4: X11/NeWS server=X11NeWS サーバー
FREQUENCY 2: OpenWindows installation=オープンウィンドウ装置

DOWNLOAD   DELETE

FIG.14